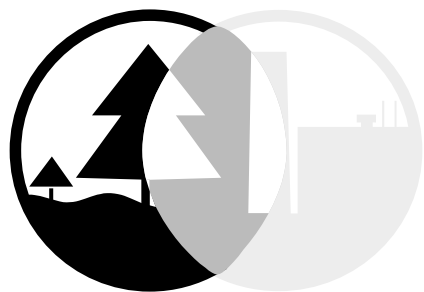




# IINERT Soil-Metals Action Team



## RTDF

Remediation Technologies  
Development Forum

## RTDF Action Teams

**Lasagna™ Partnership**

**Bioremediation Consortium**

**Permeable Reactive  
Barriers Action Team**

**Sediments Remediation  
Action Team**

***In Situ* Flushing Action  
Team**

**Phytoremediation of  
Organics Action Team**

## *What Is the IINERT Soil-Metals Action Team?*

The In-Place Inactivation and Natural Ecological Restoration Technologies (IINERT) Soil-Metals Action Team was established in November 1995 as one of seven Action Teams under the Remediation Technologies Development Forum (RTDF). The RTDF was created by the U.S. Environmental Protection Agency (EPA) in 1992 to foster collaboration between the public and private sectors in developing innovative solutions to mutual hazardous waste problems. The IINERT Soil-Metals Action Team includes representatives from industry and government who share an interest in further developing and validating *in situ* techniques as viable technologies for eliminating the hazards of metals in soils and surficial materials.

## *What Are IINERT Technologies?*

IINERT technologies chemically and physically inactivate soil metals found at the Earth's surface by reducing and essentially eliminating their solubility and bioavailability without the need for excavating the soil. *In situ* incorporation of chemicals—such as phosphates, mineral fertilizers, iron oxyhydroxides, other minerals, biosolids, limestone—changes the molecular species of the metals. Changing a metal's molecular species can reduce its water solubility, bioavailability, and potential toxicity to humans and the environment. However, the total concentration of the metals may not necessarily change.

The chemicals used for inactivation also may increase the fertility of the soil and eliminate any toxicities to plants and soil organisms. Growing a plant cover physically stabilizes the soil and its contaminants in place, which minimizes soil erosion and off-site movement of soil and the metals it contains. Incorporating amendments and growing plants are more natural ways of restoring the ecology of a soil when compared to other techniques, such as soil excavation, landfilling, soil washing, or soil capping.

Of the treatment options available for mitigating metals-contaminated soils, in-place inactivation appears to be the most cost-effective. Additionally, it treats the contaminant in a way that reduces the hazard posed by the soil rather than burying it in a landfill or covering it over. In this way, degradation and contamination of other areas do not occur since soil cover and landfill space are not needed.

## *What Is the Action Team's Mission?*

The mission is to develop and demonstrate in-place inactivation and natural ecological restoration technologies that reduce and eliminate the risks to human health and the environment of metals/metalloids in soil and to achieve regulatory and public acceptance of these technologies.

## What Are the Action Team's Goals?

The goals of the Action Team are to:

- Understand the mechanisms by which IINERT technologies work
- Develop appropriate testing protocols and methodologies that illustrate their utility
- Improve predictive capabilities
- Facilitate validation of the effectiveness and persistence of these technologies
- Prepare guidelines for effective implementation of these technologies
- Gain scientific, public, and regulatory acceptance

## What Activities Are Planned?

The Action Team plans to investigate the following questions:

- What are the physical, chemical, and biological mechanisms of hazard reduction?
- What speciation techniques are appropriate?
- What factors limit these technologies?
- What are the technical omissions?
- What factors limit public acceptance?
- What animal surrogate can be used to determine human bioavailability from soil ingestion?
- What chemical extractions/in vitro tests, which may be used to demonstrate hazard reduction, can lessen the need for animal feeding studies?

Areas to be addressed include: (1) site characterization; (2) soil characterization; (3) treatment characterization and optimization; (4) hazard characterization; and (5) hazard testing protocols.

## What Organizations Are Represented on the Action Team?



ASARCO  
Beazer East, Inc.  
The Doe Run Company

DuPont

Environmental Management Services

ILZRO

Sevenson Environmental Services, Inc.



Missouri Department of  
Health

Missouri Department of  
Natural Resources

U.S. Air Force

U.S. Department of Agriculture

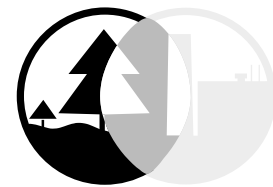
U.S. Environmental Protection Agency



Kansas State University  
North Carolina State  
University

University of Colorado

University of Missouri



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## Would You Like More Information?

For more information on the IINERT Soil-Metals Action Team, please contact:

**Bill Berti, Ph.D.**

DuPont Central Research and Development

Glasgow Business Community Site 301

P.O. Box 6101, Route 896

Newark, DE 19714-6101

Tel: 302-451-9224

E-mail: [bill.berth@usa.dupont.com](mailto:bill.berth@usa.dupont.com)

**Jim Ryan, Ph.D.**

U.S. Environmental Protection Agency

National Risk Management Research

Laboratory

26 West Martin Luther King Drive

Cincinnati, OH 45268

Tel: 513-569-7653

E-mail: [ryan.jim@epamail.epa.gov](mailto:ryan.jim@epamail.epa.gov)

For information on the RTDF or other  
Action Teams, please visit the RTDF World  
Wide Web site at [www.rtdf.org](http://www.rtdf.org) or contact:

**Robert Olexsey**

U.S. Environmental Protection Agency

26 West Martin Luther King Drive

Cincinnati, OH 45268

Tel: 513-569-7861

E-mail: [olexsey.bob@epamail.epa.gov](mailto:olexsey.bob@epamail.epa.gov)

**Walter W. Kovalick, Jr., Ph.D.**

U.S. Environmental Protection Agency

401 M Street, SW (5102G)

Washington, DC 20460

Tel: 703-603-9910

E-mail: [kovalick.walter@epamail.epa.gov](mailto:kovalick.walter@epamail.epa.gov)

To request other RTDF fact sheets, please  
write/fax to:

**EPA/NCEPI**

11305 Reed Hartman Highway, Suite 219

Cincinnati, OH 45241

Fax: 513-489-8695



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